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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,438	05/31/2001	Stanford W. Crane, Jr.	040879-5094	6576

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EXAMINER

THAI, LUAN C

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/867,438

Applicant(s)

CRANE, JR. ET AL.

Examiner

Luan Thai

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 27-30 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-19 is/are allowed.
- 6) ☒ Claim(s) 1-12, 20, 21 and 23 is/are rejected.
- 7) ☒ Claim(s) 13, 22 and 24-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restriction

1. Applicant's election without traverse of Group I, claims 1-26 in Paper No. 4 is acknowledged.

Oath/Declaration

2. The declaration filed 05/31/01 is acceptable.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1, 2, 4, 6-9, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Cohn (5,102,829).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1, 2, 4, 6-9, 11 and 12, Cohn (see specifically figure 7) discloses a semiconductor die package comprising: a package housing comprising a base 2 having a top surface for supporting a semiconductor die 4, the base 2 including a plurality of holes 10 formed there through from the bottom surface to the top surface; a plurality of electrically-conductive pins 3 retained in the holes and extending from the

base externally of the package housing; a ground (or power) plane grid 16 (Col. 5, lines 25+) in the base 2, wherein the pins 3' (e.g., the second pins from the left side and from the right side of the base 2 in figure 7 attached) are electrically insulated from and pass through the ground plane grid 16, and the side surfaces of the ground plane grid 16 that are exposed externally from the left side surface and the right side surface of the base 2 (see figure 7 attached) are considered as the contacts of the ground plane grid 16. Cohn's figure 7 further shows a plurality of protrusion portions 3'' formed along the pins and contacting the bottom surface of the base 2, the protrusion portions 3'' being considered as the claimed post.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 5, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohn (5,102,829) in view of Selna (5,640,048).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 3, 5, and 10, Cohn discloses all the limitations of the claimed invention as detailed above except for another voltage plane within the package housing.

Selna while related to a similar semiconductor package design teaches (see specifically figure 3) a base carrier 100 comprises not only a ground plane grid 200 but

also a power plane grid 260 below the ground plane 200, in order to provide both ground and power potentials for the device package. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Selna teachings of two reference voltage planes to Cohn's semiconductor package in order to provide both ground and power potentials for the device package.

7. Claims 20, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohn (5,102,829) in view of Murphy et al (5,742,481).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 20, 21, and 23, Cohn discloses all the limitations of the claimed invention, including a package lid 6 for sealing the semiconductor die in the base, as detailed above, except for a mating socket such that the package pins engage the socket to form electrical connections.

Murphy et al while related to a similar pin grid array package design teach (see specifically figure 1-3 and 5-6) a mating socket 110 comprising: a socket housing and a plurality of electrically conductive socket contact beams held in the socket housing (see figure 3), for the package pins 106 of a semiconductor die package engaging the socket contact beams to form electrical interconnections between the semiconductor die package and the PC board (Col. 4, lines 45+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the mating socket, as taught by Murphy et al, to Cohn package in order to form electrical interconnections between the semiconductor die package and the PC board.

Allowable Subject Matter

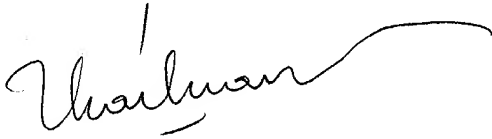
8. Claims 14-19 are allowed.
9. Claims 13, 22, and 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. The following is a statement of reasons for the indication of allowable subject matter:
The prior art taken either singly or in combination fails to anticipate or fairly suggest: a) *the base having a plurality of indentations along its side surfaces, the multiple ground plane contacts located in the plurality of indentations*, as recited in claim 13, b) *the package housing being capable of mating with the mating socket such that the post are received in the socket, the package pins engage the socket contact beams, and the reference voltage contact engages the mating pin*, as recited in claim 14, and c) *the die package further comprising solder balls for electrically coupling the semiconductor die to the package pins*, as recited in claims 24-25; especially when these limitations are considered within the specific combination claimed.
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

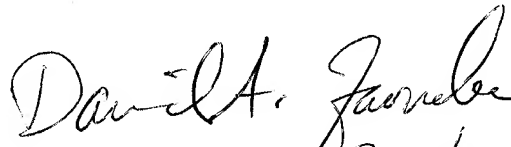
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Luan Thai
January 27, 2003



David A. Zarndke
A02827